PATENT
Attorney Docket No.: 040092-001900US

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re application of:

LAWRENCE KWONG LAM et al.

Application No.: 09/604,662

Filed: June 27, 2000

For: DUAL ELECTROOPTIC WAVEGUIDE INTERFEROMETER

Examiner: Samuel A. Turner

Art Unit: 2877

APPELLANT'S REPLY BRIEF UNDER 37 CFR § 1.193(b)(1)

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In response to the Examiner's Answer mailed on March 11, 2003 to the Appeal Brief filed on February 6, 2003, Applicants respectfully request the Board of Patent Appeals and Interferences to consider the following remarks. This reply brief is filed in triplicate, and is believed to be proper pursuant to 37 CFR § 1.193(b)(1).

GROUPING OF THE CLAIMS:

In the present case, the rejected claims do not all stand or fall together. Applicants submit that each claim presents distinct issues concerning patentability. In the interest of administrative economy and efficiency, however, Applicants agree to narrow the issues for the purposes of this appeal only by grouping the claims as follows:

Group 1: Claims 1-6, which relates generally to an apparatus comprising a first optical waveguide producing a first optical output, a first electrode, a second optical waveguide producing a second optical output, a second electrode, and a photo detector in the path of an interference pattern produced by the first and second optical outputs;

Group 2: Claims 7-12, which are directed generally to the same subject matter as claim 1, but which include the additional limitation of a lens assembly optically coupled between the outputs of the first and second optical waveguides and the photo detector array;

Group 3: Claims 13, 14, 16, and 17, which relate generally to a method comprising electro-optically modulating a first optical signal using a first electrical signal, electro-optically modulating a second optical signal using a second electrical signal, and combining the first and second modulated optical signals in a diffracted region, producing an interference pattern;

Group 4: Claim 15, which is directed generally to the same subject matter as claim 13, but which includes the additional limitation that the diffraction region is a Rotman lens;

Group 5: Claims 18 and 19, which are directed generally to the same subject matter as claim 13, but which include the additional limitation that the interference pattern is detected by a photo detector array having multiple elements wherein each element of the photo detector array receives one of the multiple outputs of a Rotman lens;

Group 6: Claim 20, which relates generally to a method of measuring an input signal, comprising producing an interference pattern based on the input signal, detecting a location of a null of the interference pattern, and producing an output signal based on the location of the null;

Group 7: Claim 24, which is directed generally to the same subject matter as claim 20, but which includes the additional limitation that the output signal is measured to determine the phase difference between two input optical signals;

Group 8: Claims 21 and 22, which are directed generally to the same subject matter as claim 20, but which include the additional limitation of receiving a first electrical input signal, electro-optically modulating a first optical signal using the first electrical signal, and combining the modulated first optical signal with a second optical signal to produce the interference pattern; and

Group 9: Claim 23, which is directed generally to the same subject matter as claim 20, but which includes the additional limitation that the output signal is measured to determine an input voltage.

ARGUMENTS:

Claim Group 1

Claims 1-6 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Figure 1 in view of Leuchs et al.

In the Appeal Brief, Applicants have pointed out the deficiencies of Leuchs et al. For instance, Leuchs et al. does not suggest a device for determining a phase difference between two signals. Nor does Leuchs et al. disclose the use of electrodes substantially parallel to optical waveguides.

In addition, Applicants respectfully submit that there is no motivation to combine the references without the benefit of hindsight. Federal Circuit "case law makes clear that the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references." *In re Dembiczak*, 50 U.S.P.Q.2d 1614, 1617 (Fed. Cir. 1999) (citations omitted).

The interferometer in Figure 1 uses a combiner 122 to combine the signals from the modulated sections 118, 220 and produce the output 124 that emerges as modulated optical signal 126. There is no motivation to change that configuration. Leuchs et al. fails to suggest any benefits in modifying the configuration of Figure 1 to remove the combiner 122 and produce an interference pattern instead.

There is an utter lack of motivation to combine Figure 1 with Leuchs et al. To guard against the tempting trap of hindsight, the evidence of a suggestion, teaching, or motivation to combine "must be clear and particular." *Dembiczak*, 50 U.S.P.Q.2d at 1617

(citation omitted). "Broad conclusory statements regarding the teaching of multiple references, standing alone, are not 'evidence.'" *Id.* (citations omitted). "Combining prior art references without evidence of such a suggestion, teaching, or motivation simply takes the inventor's disclosure as a blueprint for piecing together the prior art to defeat patentability--the essence of hindsight." *Id.* (citing *Interconnect Planning Corp. v. Feil*, 227 U.S.P.Q. 543, 551 (Fed. Cir. 1985)). Just because the different elements from the three references may be pieced together does not constitute evidence of a motivation to combine them. This is the situation at hand. The Examiner's position is that Leuchs et al. suggests the outputs of two waveguides can be coupled together and the interference intensity measured. This does not constitute motivation to combine Leuchs et al. with Figure 1, but merely indicates that interference intensity can be measured.

For at least the foregoing reasons, Applicants respectfully submit that claims 1-6 are patentable.

Claim Group 2

Claims 7-12 depend from claim 1, and are rejected under 35 U.S.C. § 103(a) as being unpatentable over Figure 1 in view of Leuchs et al. and Geary.

Geary is cited merely for allegedly disclosing the use of magnifying optics that can be positioned between the waveguide ends and the detector array. Geary does not cure the deficiencies of Figure 1 and Leuchs et al.

Accordingly, Applicants respectfully assert that claims 7-12 are patentable.

Claim Group 3

Claims 13, 14, 16, and 17 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Figure 1 in view of Leuchs et al. As discussed above in connection with Claim Group 1, there is no suggestion in Leuchs et al. to combine the first and second modulated optical signals in a diffracted region, producing an interference pattern, as recited in claim 13 from which claims 14, 16, and 17 depend.

Therefore, Applicants respectfully contend that claims 13, 14, 16, and 17 are patentable.

Claim Group 4

Claim 15 depends from claim 13 and is rejected under 35 U.S.C. § 103(a) as being unpatentable over Figure 1 in view of Leuchs et al. and Geary. Geary is cited merely for allegedly disclosing the use of magnifying optics that can be positioned between the waveguide ends and the detector array. Geary does not cure the deficiencies of Figure 1 and Leuchs et al.

Accordingly, Applicants respectfully assert that claim 15 is patentable.

Claim Group 5

Claims 18 and 19 depend from claim 13 and are rejected under 35 U.S.C. § 103(a) as being unpatentable over Figure 1 in view of Leuchs et al. and Geary. Geary is cited merely for allegedly disclosing the use of magnifying optics that can be positioned between the waveguide ends and the detector array. Geary does not cure the deficiencies of Figure 1 and Leuchs et al.

Accordingly, Applicants respectfully assert that claims 18 and 19 are patentable.

Claim Group 6

Claim 20 is rejected under 35 U.S.C. § 102(b) as being anticipated by Geary.

The Examiner states that nothing in claim 20 restricts the claim to a single detector of detecting the dark and bright fringe, and that detector A in Geary generates signal for the position of the dark fringe. The Examiner misses the point. Geary simply does not teach "detecting the location of a null of the interference pattern" as recited in claim 20.

Therefore, Applicants respectfully contend that claim 20 is novel and patentable over Geary.

Claim Group 7

Claim 24 depends from claim 20 and is rejected under 35 U.S.C. § 102(b) as being anticipated by Geary.

Claim 24 is novel over Geary due to its dependency from claim 20. Moreover, Geary discloses measuring optical coherence between two signals, but fails to teach measuring the output signal "to determine the phase difference between two input optical signals" as recited in claim 24.

Accordingly, Applicants respectfully assert that claim 24 is novel and patentable over Geary.

Claim Group 8

Claims 21 and 22 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Figure 1 in view of Leuchs et al. Claims 21 and 22 depend from claim 20, and are patentable at least due to their dependency from claim 20. In addition, as discussed above in connection with Claim Group 1, there is no suggestion in Leuchs et al. to combine the first and second modulated optical signals to produce an interference pattern.

Therefore, Applicants respectfully contend that claims 21 and 22 are patentable.

Claim Group 8

Claim 23 depends from claim 20 and is rejected under 35 U.S.C. § 103(a) as being unpatentable over Figure 1 in view of Leuchs et al. Claim 23 is patentable at least due to its dependency from claim 20. Moreover, Leuchs et al. also fails to teach or suggest measuring the output signal based on the location of the null to determine an input voltage.

Accordingly, Applicants respectfully submit that claim 23 is patentable.

CONCLUSION:

In view of the foregoing, Applicants respectfully submit that the claims are in condition for allowance, and respectfully request that the rejection of these claims be reversed.

Respectfully submitted,

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PTO/SB/21 (05-03)
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Application Number	09/604,662
Filing Date	June 27, 2000
First Named Inventor	Lam, Lawrence Kwong
Art Unit	2877
Examiner Name	Samuel A. Turner
Attorney Docket Number	040092-001900US

Total Number of Pages in This Submission

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- ☐ Fee Transmittal Form
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- ☐ Amendment/Reply
  - ☐ After Final
  - ☐ Affidavits/declaration(s)
- ☐ Extension of Time Request
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- ☐ Information Disclosure Statement
- ☐ Certified Copy of Priority Document(s)
- ☐ Response to Missing Parts/ Incomplete Application
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